

The Circulatory System

Chapter 5
Page 37





Its red when it comes out



Blood carries oxygen

It is pumped by our heart



It's Red
It's Purple
It's Blue



It runs all around our body



HOMework

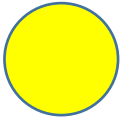
ctangular S...

It is important to
read the topics
we cover in class
to re-enforce
your learning



Group Task

In your group
think of **6 things** you
know about the
circulatory system
5 min



Important Words

- Circulatory
- Cardiac
- Pulse
- Tissue
- Red Blood Cell
- White Blood Cell
- Platelet
- Plasma
- Artery
- Vein
- Capillary
- Valve

● Introduction

Living things need a **transport system**.

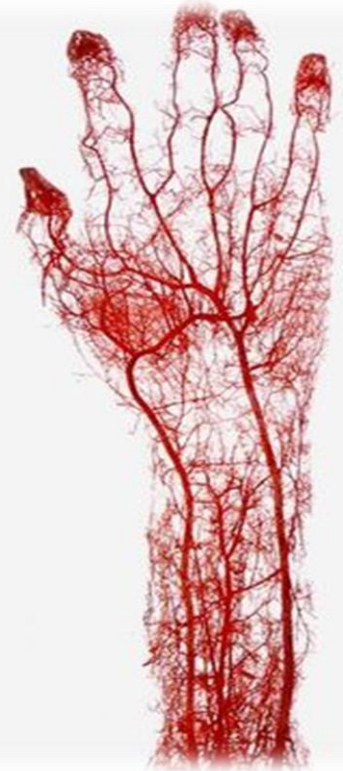
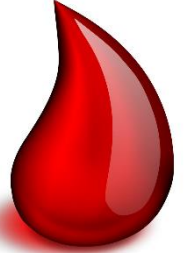
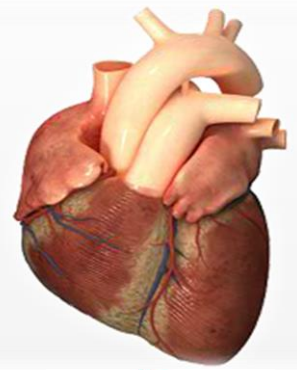
In humans its called "**The circulatory system**"

It is made up of:

The **Heart**

5 litres **Blood**

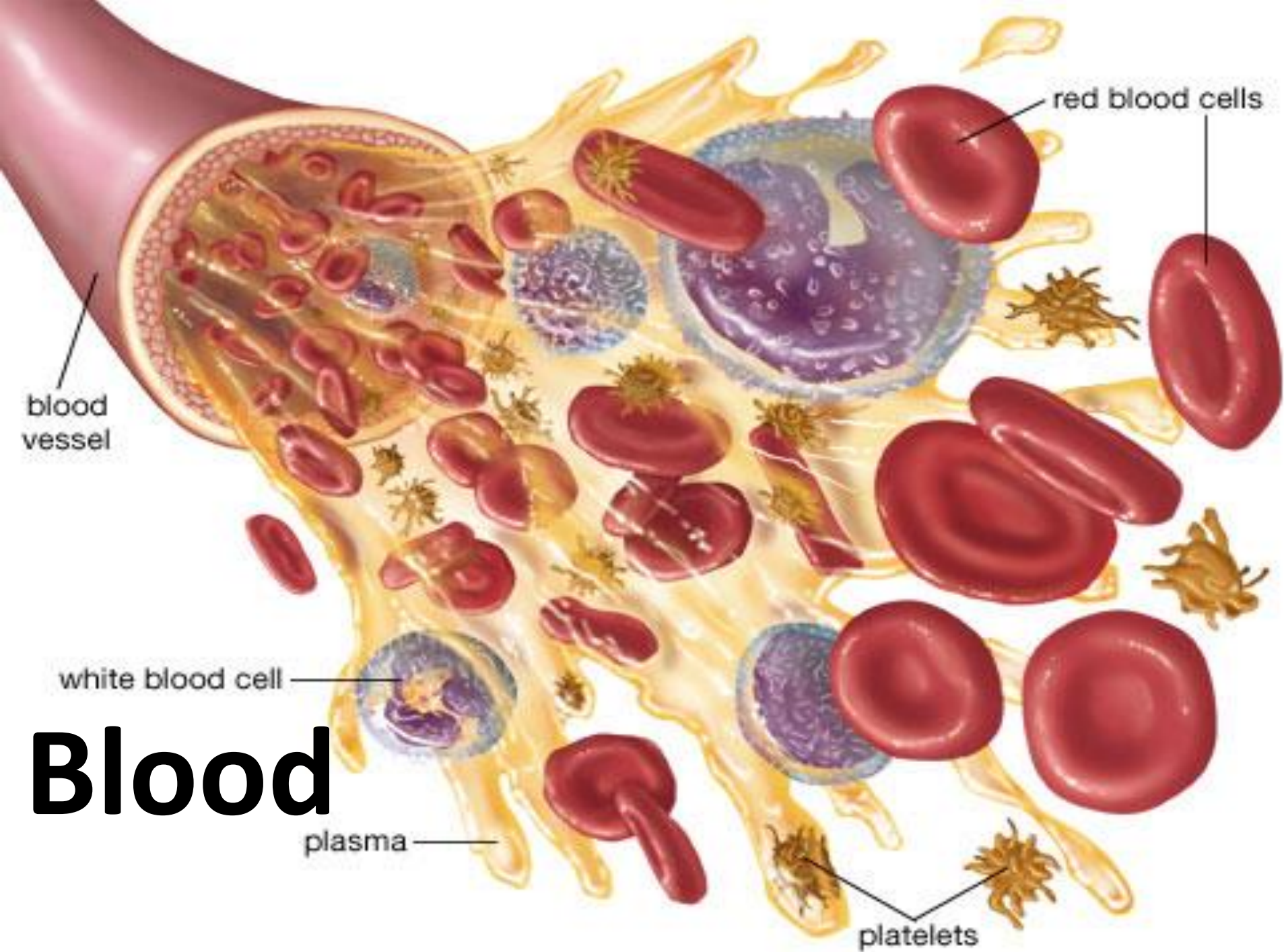
100,000km **Blood Vessels**



- Blood flows around the body in a continuous cycle every **30 seconds**
- Blood flows passed every cell delivering **nutrients** (food) and **oxygen** and removing **waste**



William Harvey
1578 - 1637



Blood

● Functions of the Blood

Can you think of any?

1. Transport

Carries oxygen, food, waste, hormones

2. Defence against Disease

Destroys harmful bacteria & viruses, helps clot blood

3. Controls Body Temperature

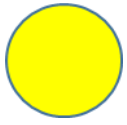
Keeps the body at 37°C



Transport



Substance	Carried From	Carried To
Oxygen		
Carbon Dioxide		
Glucose		
Urea		

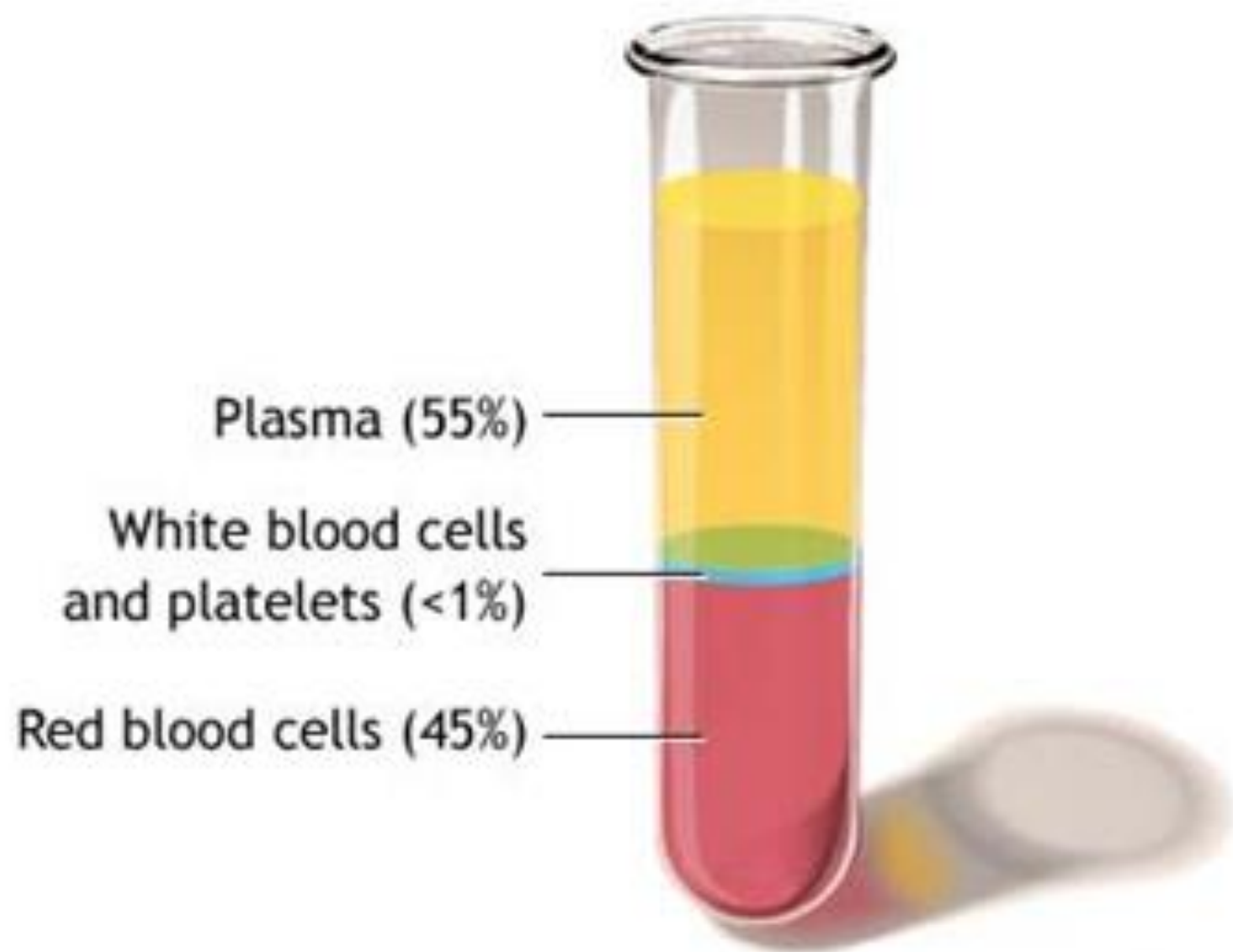


Composition of blood

Blood is made of a liquid called **plasma** and 3 types of cells.



- **Red Blood Cells**
- **White blood cells**
- **Platelets**



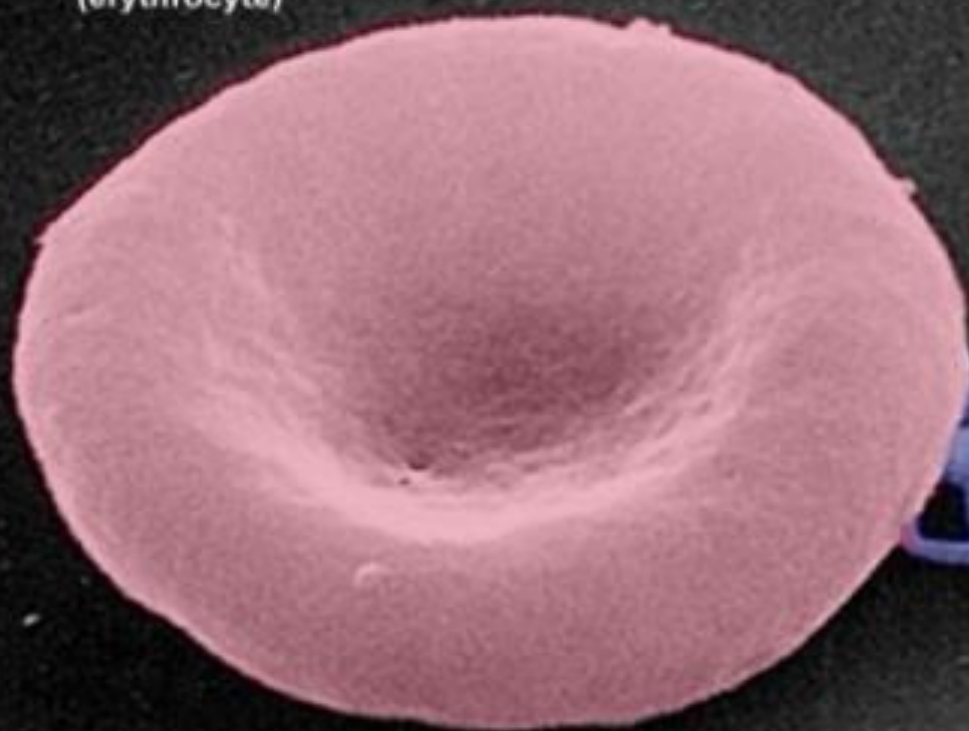
SIZE COMPARISON

7.5micron

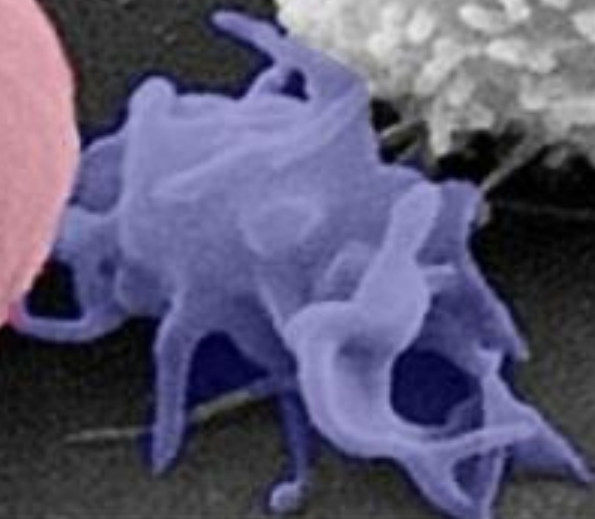
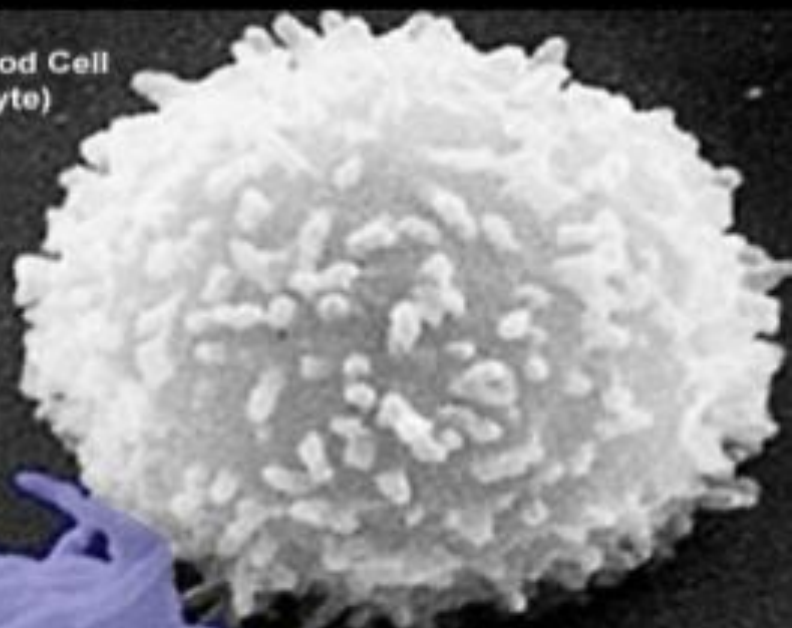
2-4micron

10-14

Red Blood Cell
(erythrocyte)



White Blood Cell
(lymphocyte)



Platelet
(thrombocyte)

● Plasma

Yellow liquid

90% water

10% dissolved substances

e.g. glucose, urea, protein,
 CO_2

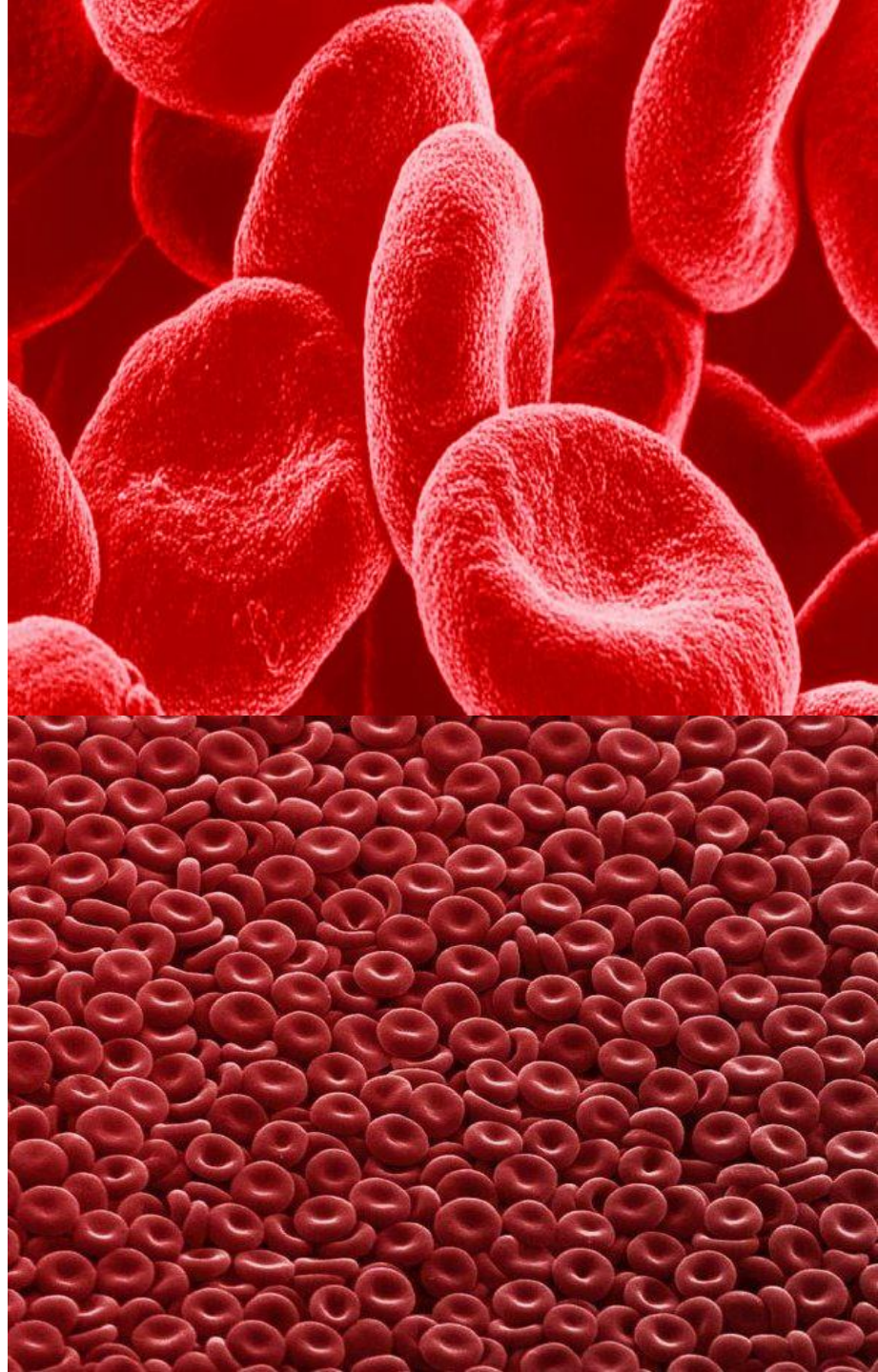
Function

To transport heat and
dissolved substances



● Red Blood Cells (RBC)

- **Biconcave** discs
- Transport oxygen
- They contain a substance called **Haemoglobin** which absorbs the oxygen
- Haemoglobin is a red pigment made with Iron



A microscopic view of numerous red blood cells (erythrocytes) in a blood smear. The cells are biconcave discs, appearing as reddish-orange, textured spheres with a central indentation. They are densely packed and fill the entire frame. In the top-left corner, there is a small, bright yellow circle.

Red Blood Cells (RBC)

- Have no nucleus ...so cannot reproduce**
- Very thin cell walls to allow O_2 to get in**

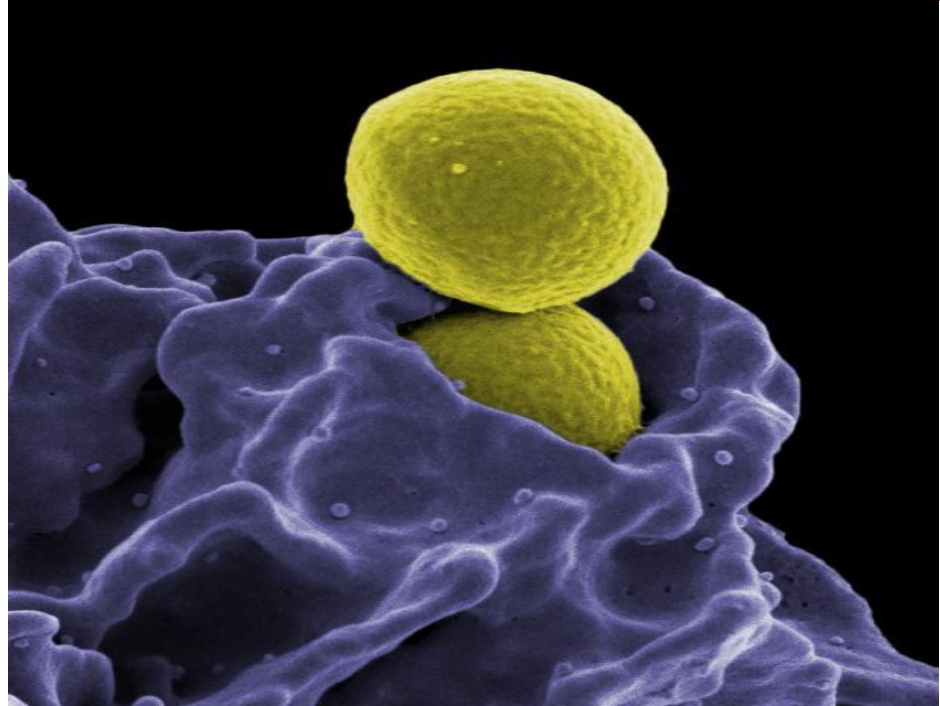
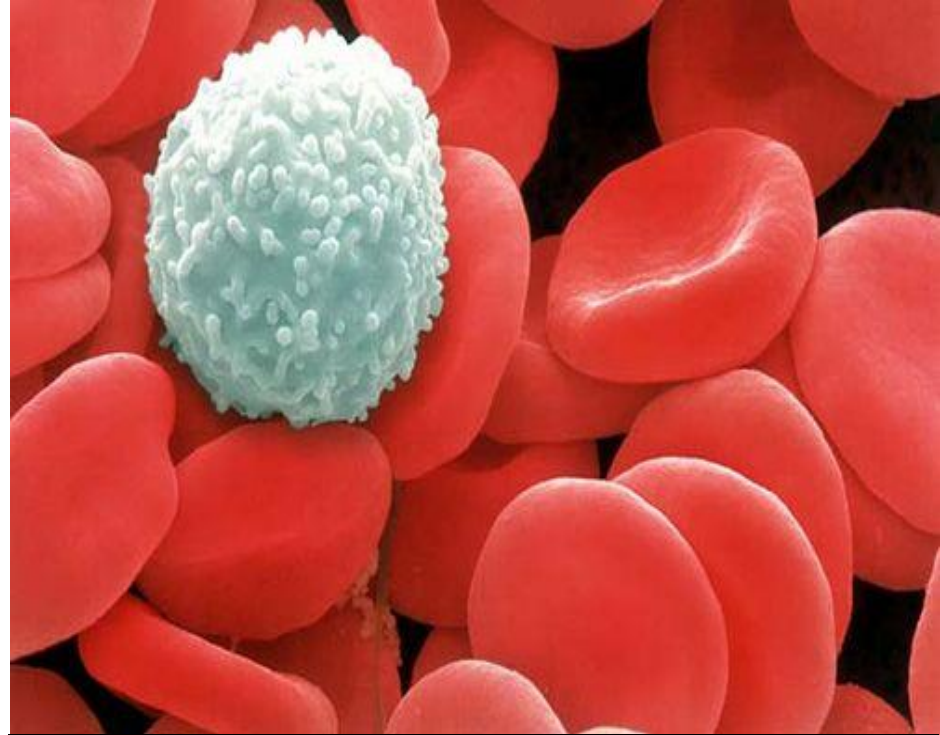
The red pigment in
RBC is called
Haemoglobin

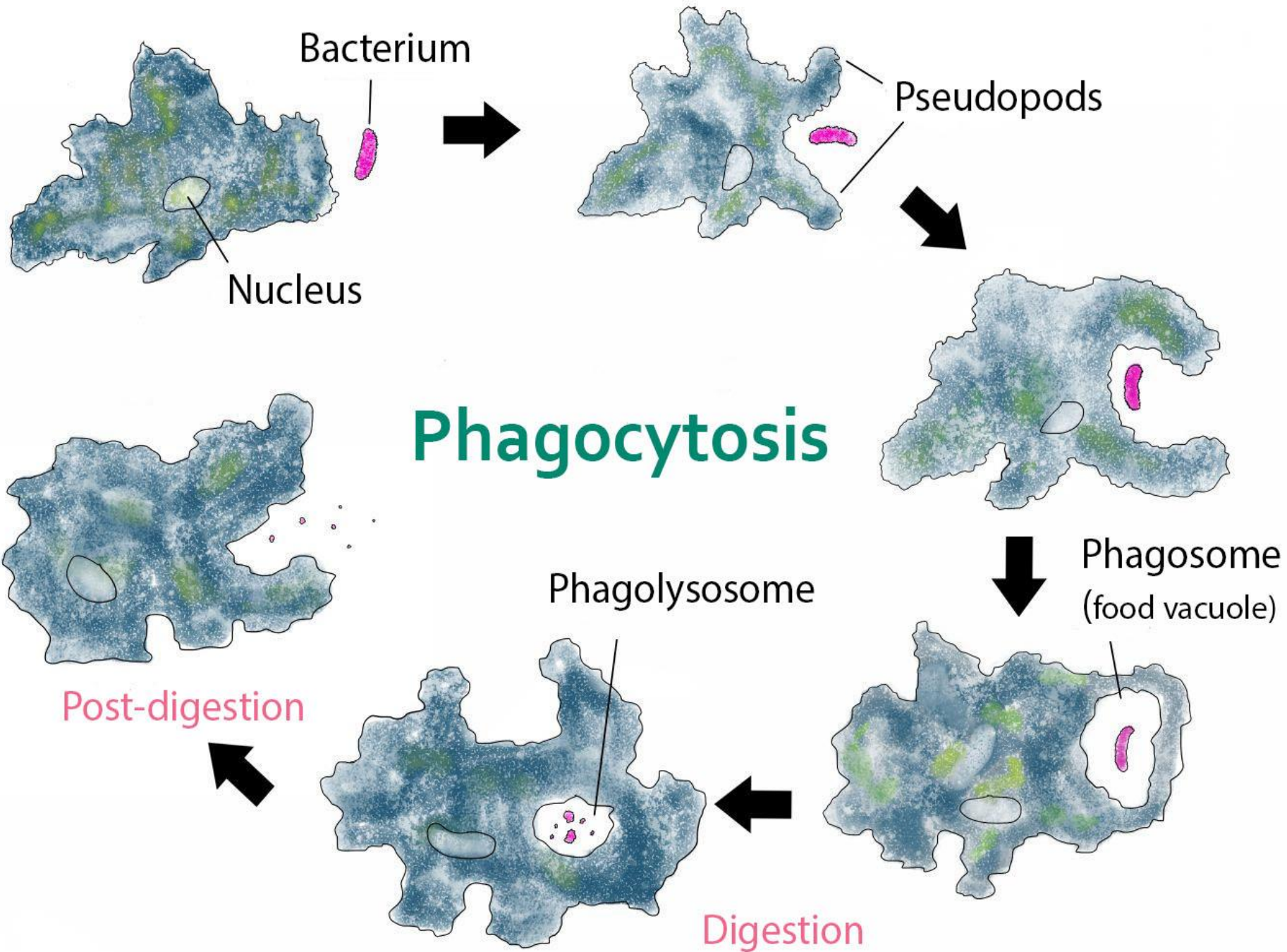


Oxygen binds to
Haemoglobin

White Blood Cells (WBC)

- No definite shape
- Fight infection
- Some make **antibodies** that kill germs
- Others **engulf** and destroy germs





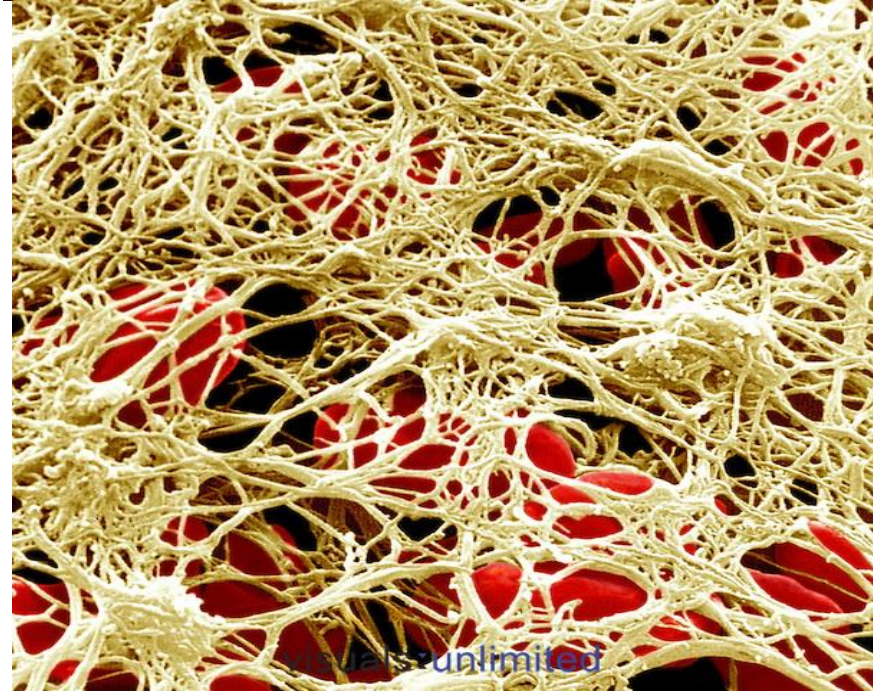
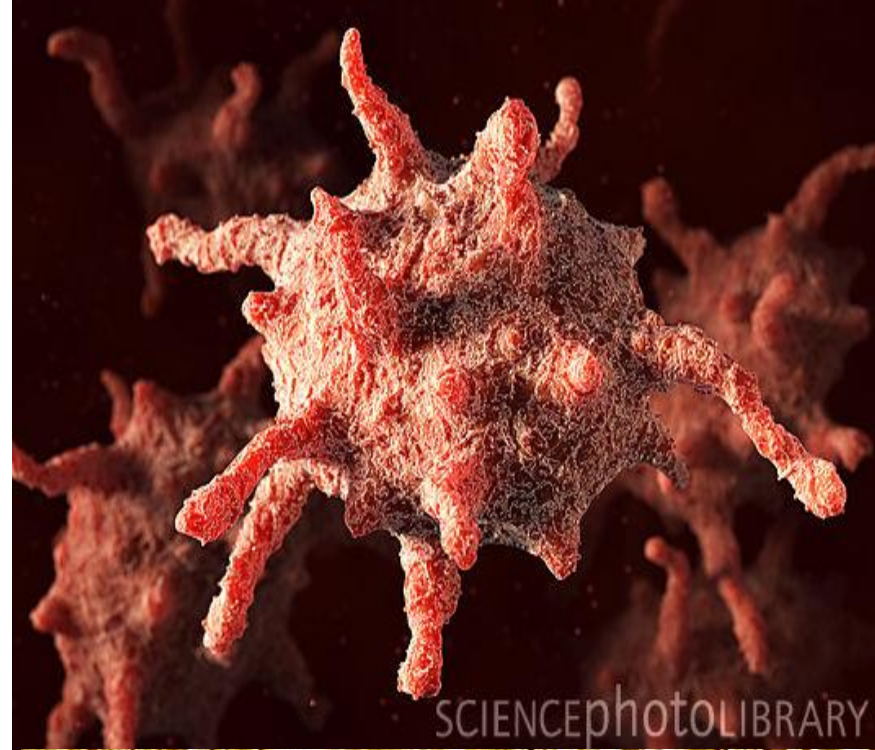


Platelets

Cell fragments

Involved in **clotting** the blood.

The platelets clump together and block the wound



Blood Vessels





Blood Vessels

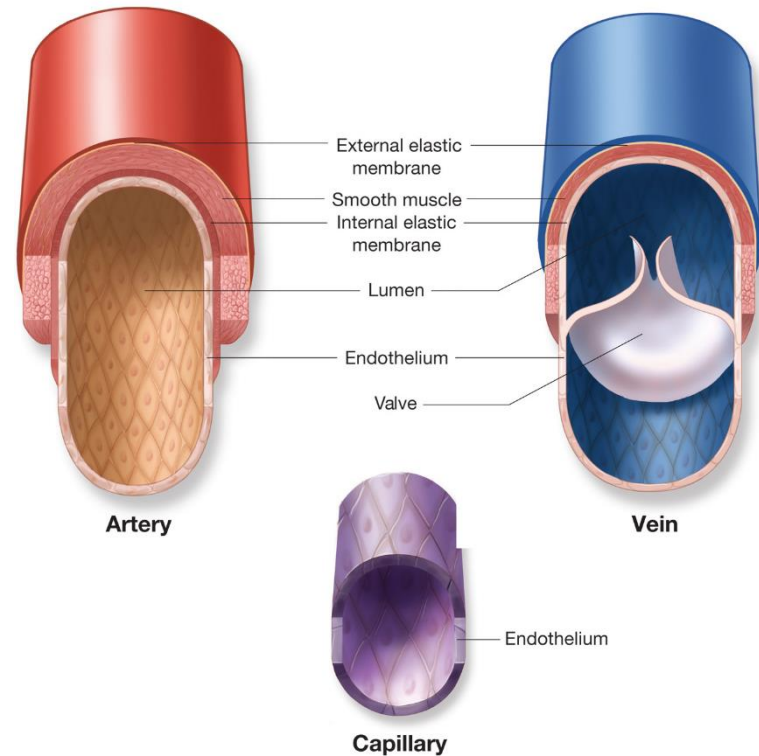
Tubes that carry blood around the body

3 types

1. Arteries

2. Capillaries

3. Veins



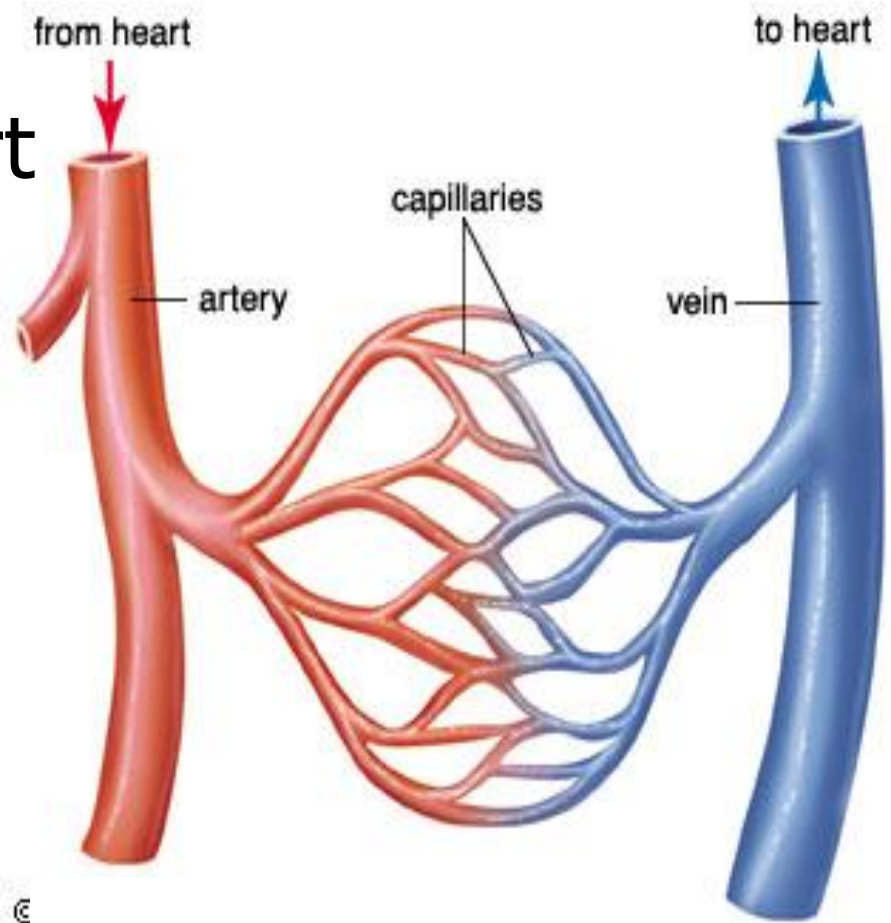


Functions

Arteries carry blood **away** from the heart

Capillaries **connect** arteries to veins

Veins carry blood **back** to the heart





Arteries and Veins

Arteries:

Thick walled

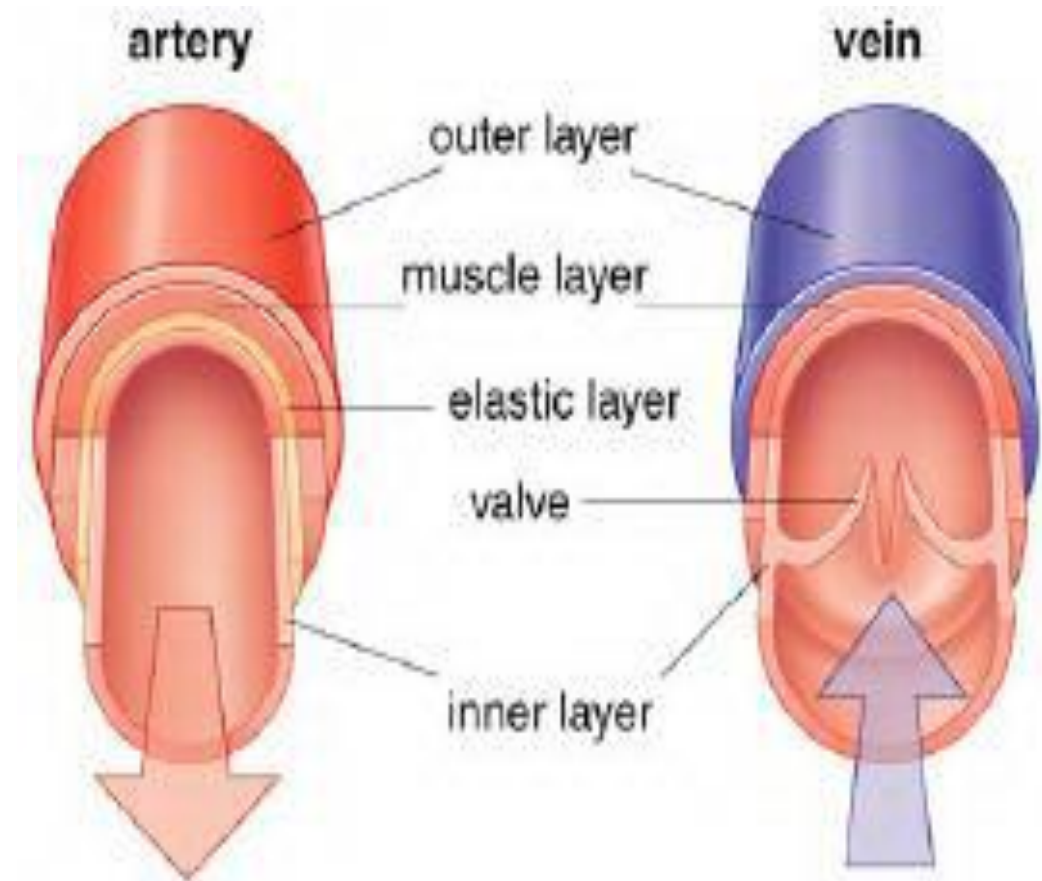
Blood flows in spurts

Veins:

Thin walls

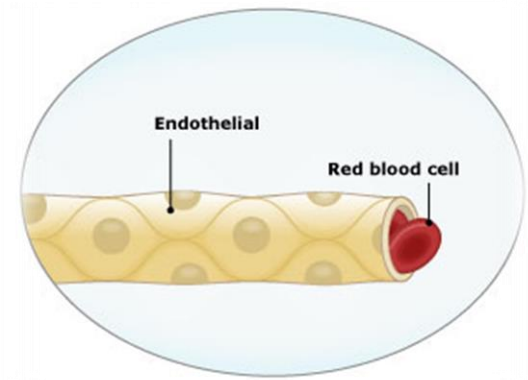
Blood flow evenly

Valves to prevent the blood flowing backwards



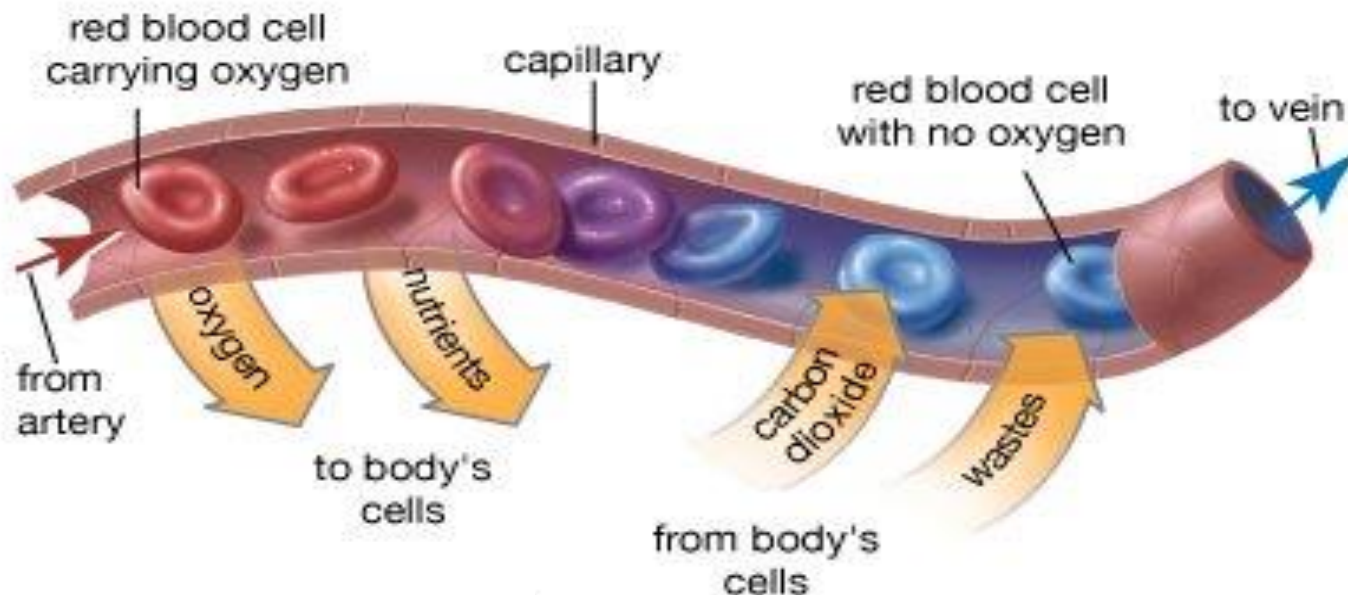


Capillaries



Very thin walls

When blood flows through capillaries **substances are exchanged between the blood and body cells**



The Heart

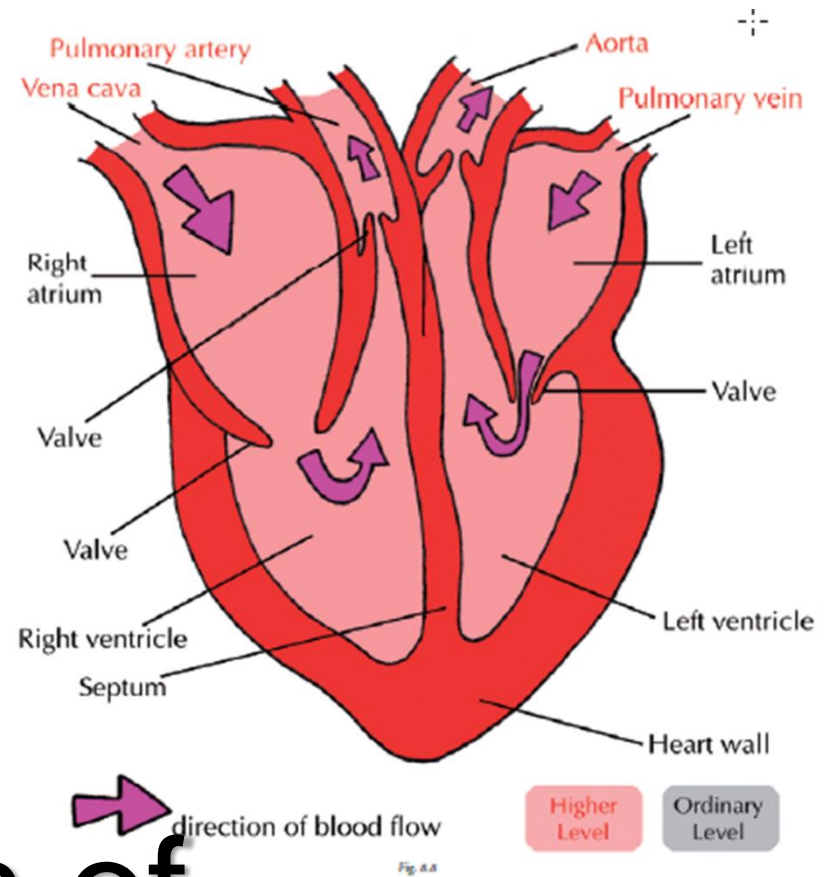


A Sheep's Heart



TASK

Use the diagrams
and your text book to
complete the
diagram of the heart



Draw a diagram of the heart into your notes copies

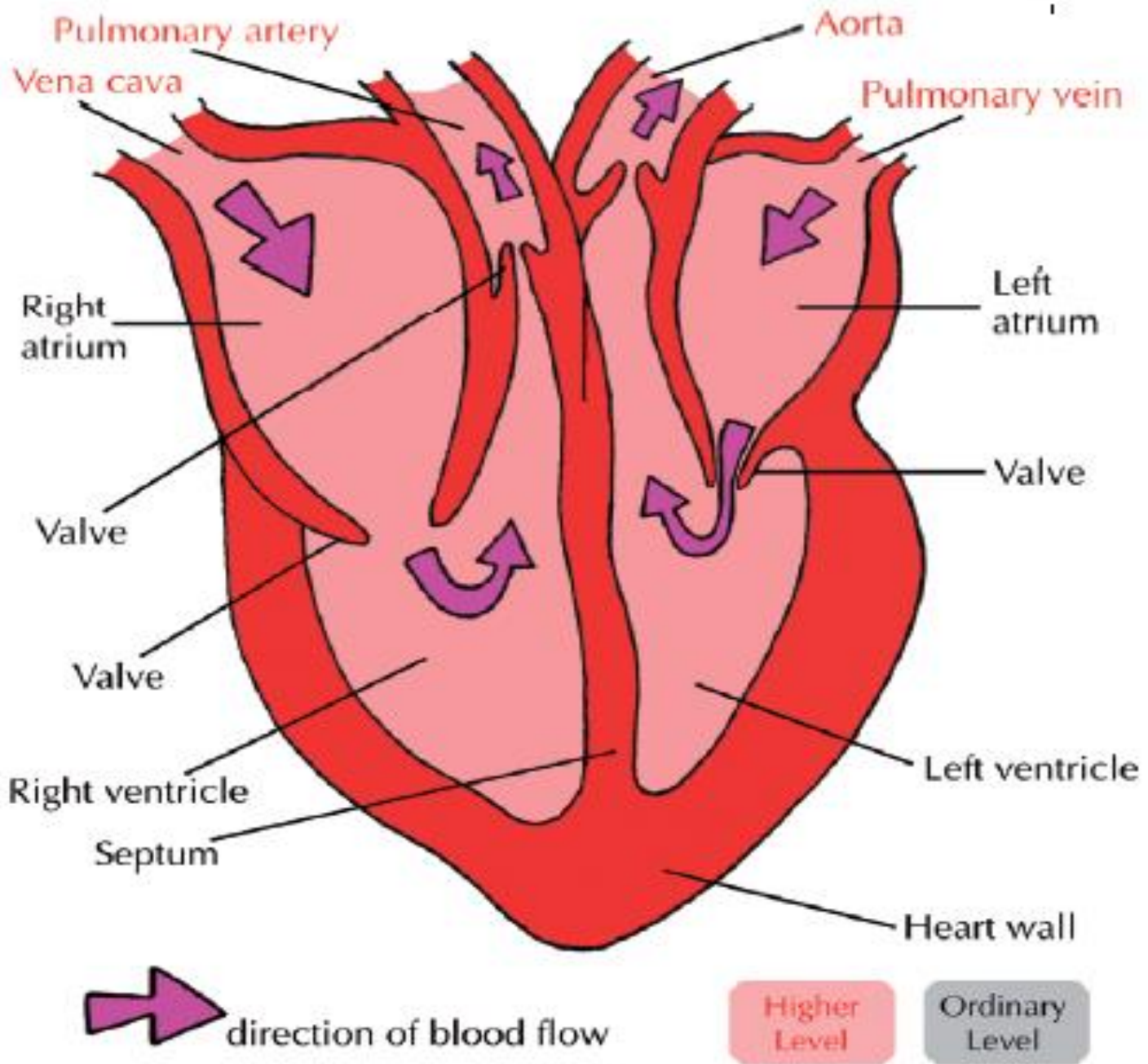
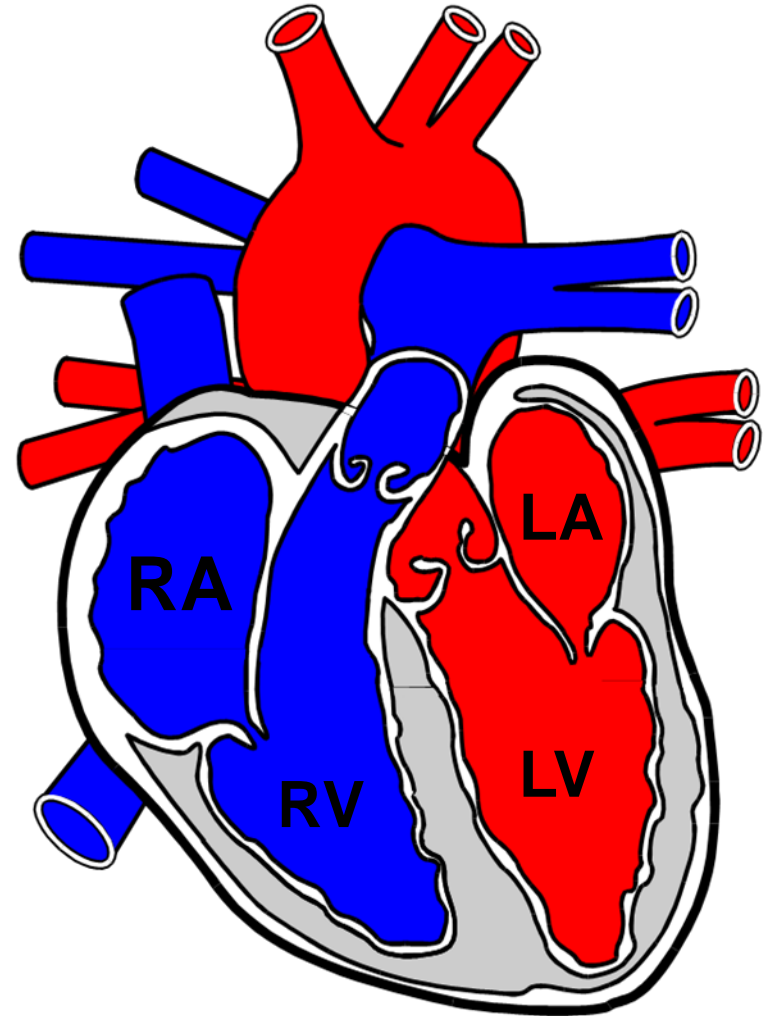


Fig. 8.8

● Structure of the Heart

- Thick muscular walls
- **Septum** separates left and right
- There are 4 chambers
- Left & right **Atria**
- Left & right **Ventricles**

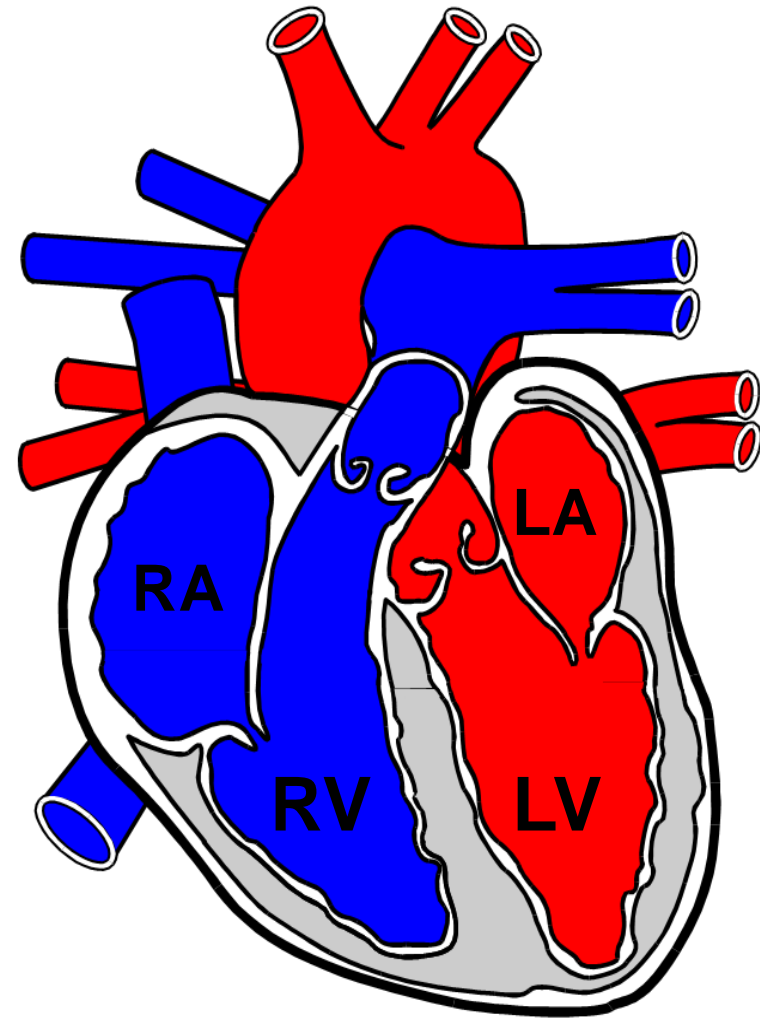


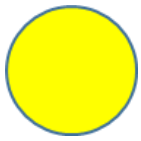


Chambers are separated by valves

Valves stop the backflow of blood

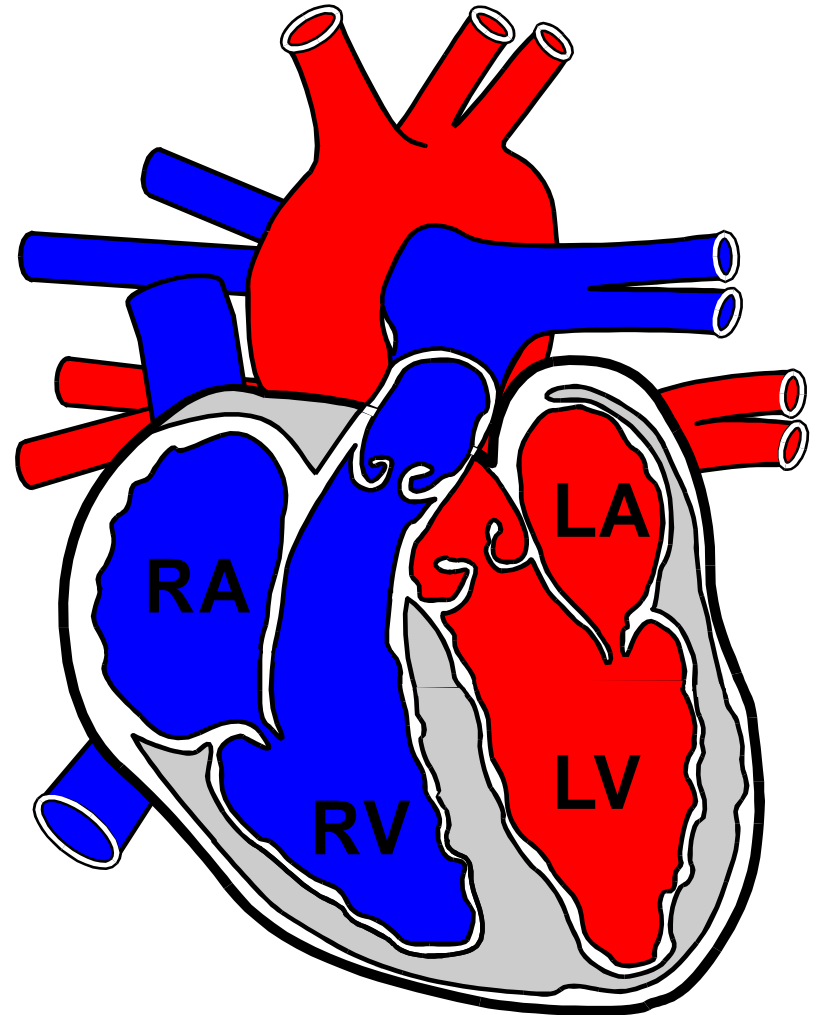
Walls of the left ventricle are thicker than the right





Right side pumps
deoxygenated blood
to lungs

Left side pumps
oxygenated blood
to ALL parts of body



Blood Flow

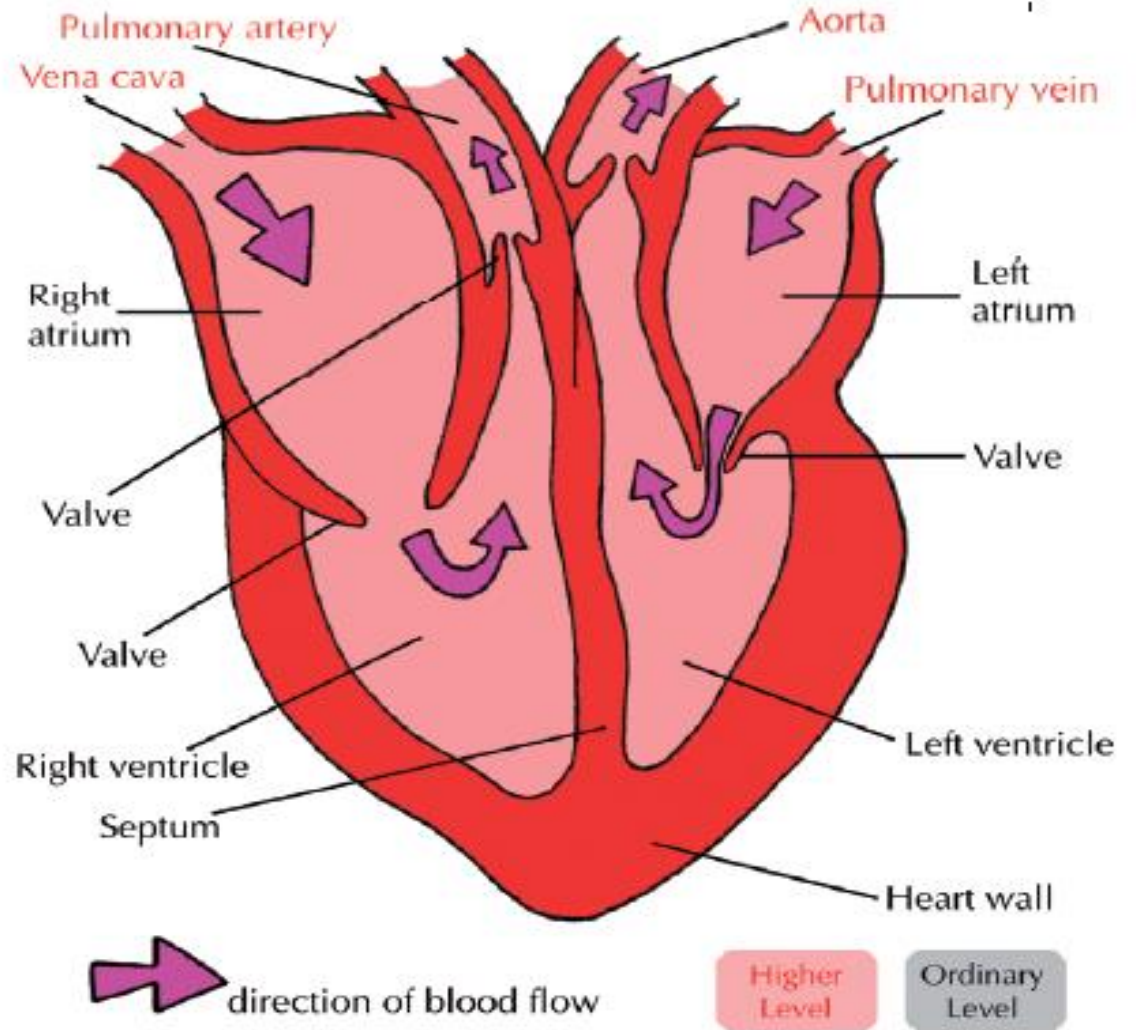


Fig. 4.4

Use the printed diagram to learn the flow of blood around the Heart

Blood Flow Through The Heart

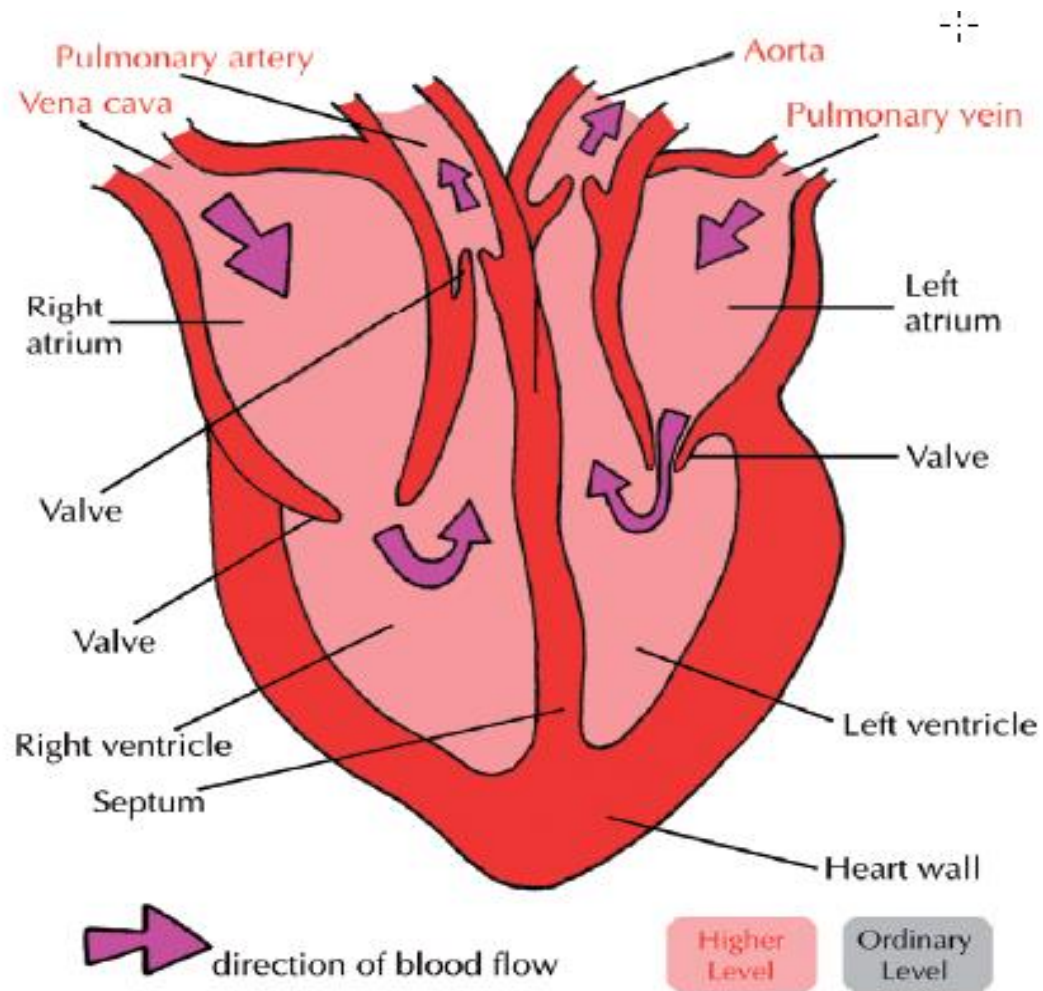
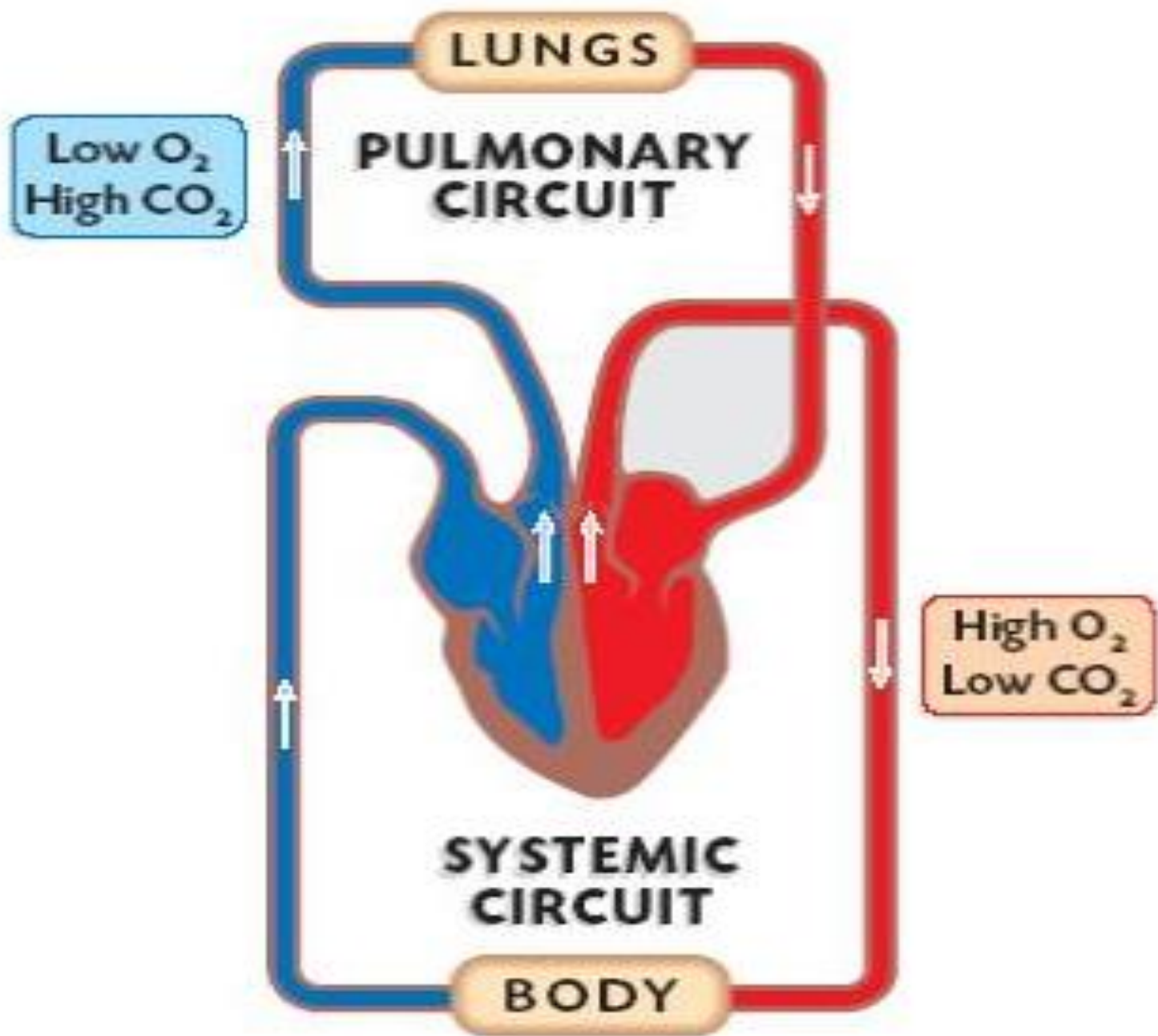


Fig. 8.4



Collaborative task

- Group must explain how blood flows through the heart and to the lungs then back to the heart and around the body
- Use poem, songs, rap, mime Poster
- You have ten minutes to come up with your ideas



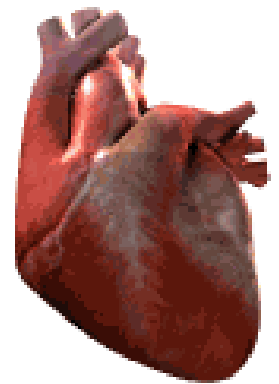
Pulse

Adult heart beats 70 times per minute at rest

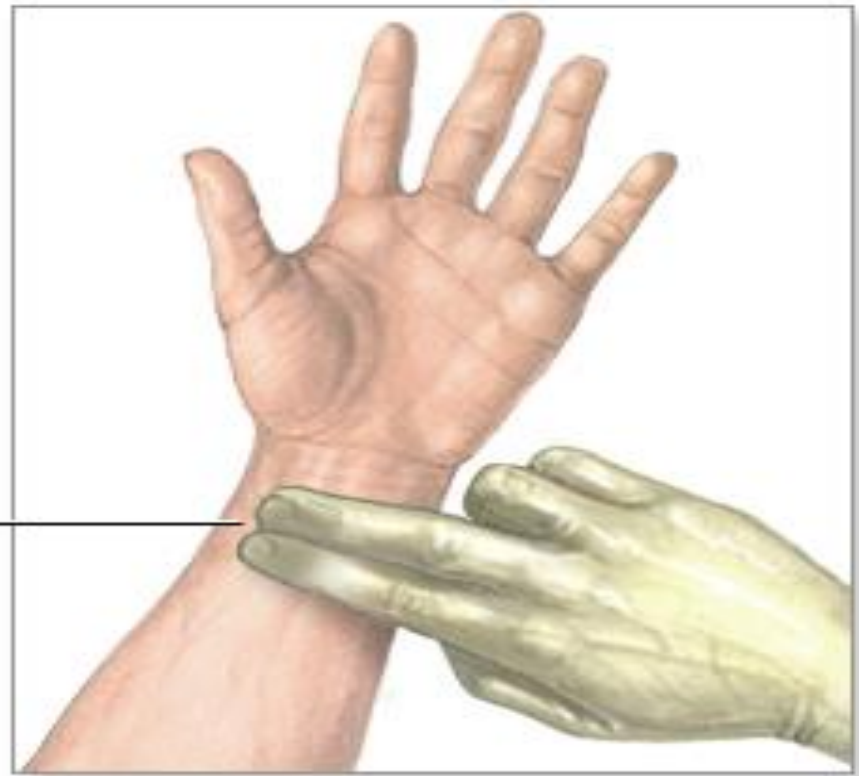
Pulse can be felt arteries are close to the skin's surface

Wrist, temple, neck

What creates the pulse?



Pulse
measurement
in the wrist



Measuring pulse rate

The Heartbeat

Heart beat can be effected by :

Illness

Drugs

Anxiety

Excitement

Exercise

WHY?



Why exercise causes the heart beat to go faster

- Body needs more energy
- Food and O_2 must get to cells and waste must be removed faster
- Blood must move faster so heart must beat faster and breathing must also speed up



Experiment



Develop your **hypothesis**

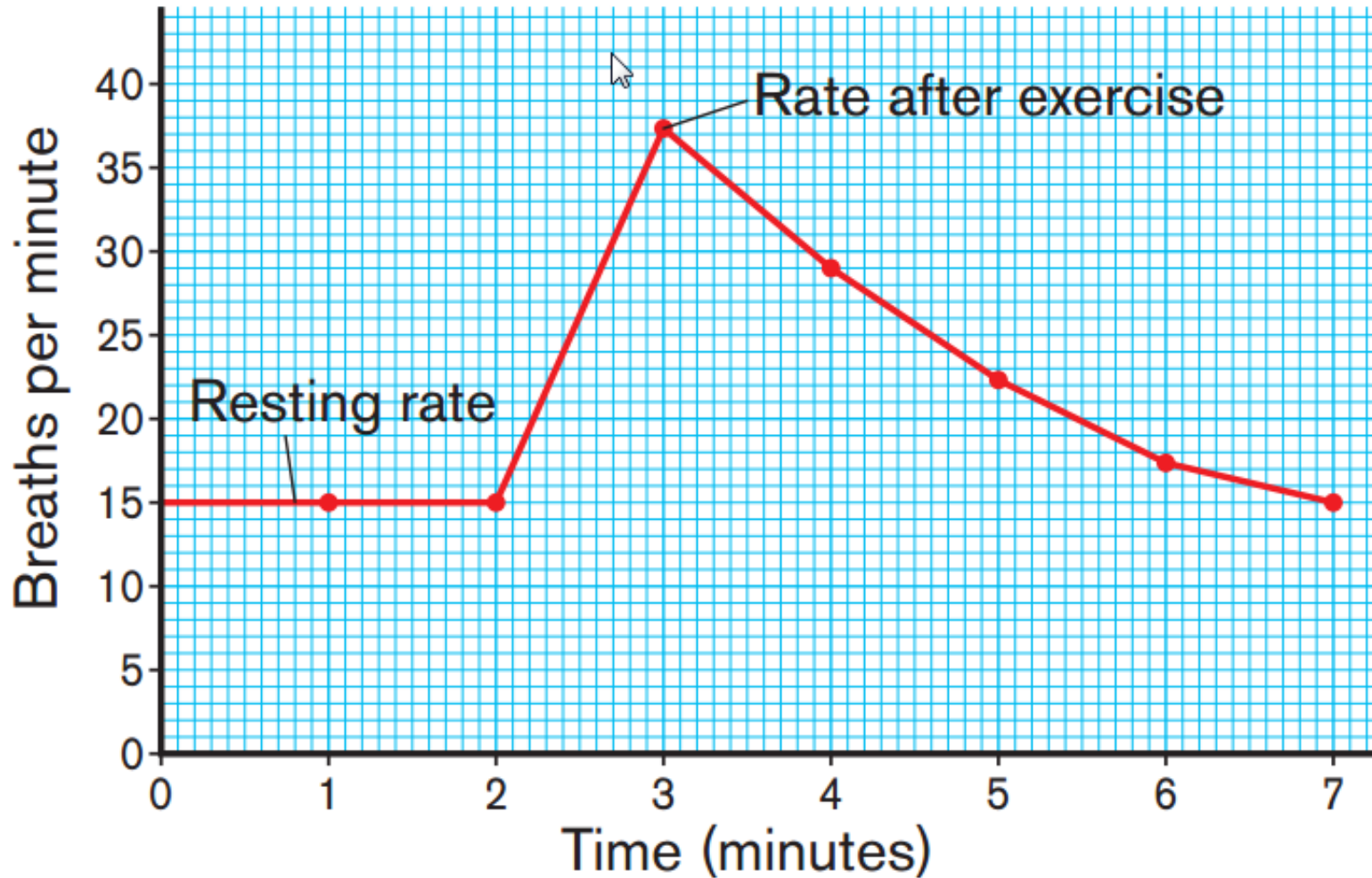
When a person
exercises their pulse
rate and their breathing
rate will increase

Develop your hypothesis

1. Nominate Test Subject, Recorder, Timekeeper & Counter
2. Record Subjects average resting pulse
3. Allow subject to jog on the spot for 1 min
4. Record Pulse rate immediately
5. Record Pulse rate after 1 min
6. Record Pulse rate after 2 mins
7. Record your results in a table and graph

**Was your
hypothesis
proven or not ?**

Results: For breathing rate



A Healthy Heart

What do we need to do to keep our heart healthy?

Exercise

Rest

Healthy diet

No smoking



Circulatory System

